

A MEDIUM FOR NON-COMMERCIAL SOWING OF ORCHID SEED

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ABSTRACT. Conservation of orchid seed presents at times difficult problems. Because not all orchid seed can be stored, non-commercial sowing in home gardens is a technique that orchid conservation groups might encourage. The media for sowing the seeds normally consists of a gelling agent, minerals, sugar, and organic compounds. The gelling agent can be agar or alginic acid, which may be expensive, especially if the ingredients are pure. The aim of this work was to test different starch sources as gelling agents. For home sowing of orchid seed, a media using maize starch as the gelling agent can be prepared, and pH can be adjusted. This sowing method has potential for individuals interested in raising their own orchids.

Key words: orchid seed, sowing, gelling agent, seed germination, starch

INTRODUCTION

In forests, especially those being subjected to deforestation, native plants, including orchids, are being collected for scientific study by public and private foundations. At some locations, orchid seeds are collected for storage; and as a result, new species, yet unknown to scientists, are appearing in private collections. When seeds are collected, however, they rarely are sowed or stored. Seed conservation presents problems that necessitate careful treatment. Because not all orchid seeds can be stored, sowing in home gardens offers promise as a method that orchid conservation groups might encourage.

Home sowing has the advantage of reducing the number of plants that need to be collected in the wild, as individual orchidists will be able to sow and grow more plants in their gardens or greenhouses, than can be collected in a single trip.

Traditional seed sowing in tissue culture laboratories, however, is neither easy nor cheap. To achieve successful seed sowing, the following requirements must be met:

1. Seed must be disinfected with sodium or calcium hypochlorite or with other chlorine derivatives.
2. Flasks and caps are necessary for culture.

3. Depending on the species, seeds may require media with more or less acidity.
4. Culture media consist of various chemicals that can be expensive, especially if a medium becomes contaminated by fungus or bacteria and has to be thrown away.
5. Culture media must be sterilized to prevent contamination, using a clean cabinet or an open flame.
6. A clean space with good light is mandatory for plant growth.

With some experience, home growers may be able to make a medium for orchid seeds, using market products, such as coconut water, banana pulp, tomatoes, and a small amount of soluble fertilizer. Sowing experiments have been conducted by Darly Machado de Campos, chairman of the Brazilian Association of Orchidologists (ABO), with good results. Using a simplified culture media, at least two species have been mass propagated for reintroduction in the wild; these are *Cattleya granulosa* and *C. nobilior*.

For the most part, the media consist of a gelling agent, minerals, sugar, and organic compounds. These gelling agents can be agar or alginic acid, both of which can be expensive, especially if ingredients are pure. The aim of this work was to test different starch sources as gelling agents.

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TABLE 1. Chemical composition of maize starch media for home sowing of orchid seed, Presidente Prudente, Brazil, 2004.

N	P	K	Ca	Mg	S	B	Cu	Fe	Mn	Zn	pH
g.kg ⁻¹						Mg.kg ⁻¹					
3.6	0.7	34.0	29.5	0.7	1.5	2.2	74	348	20	5	4.6

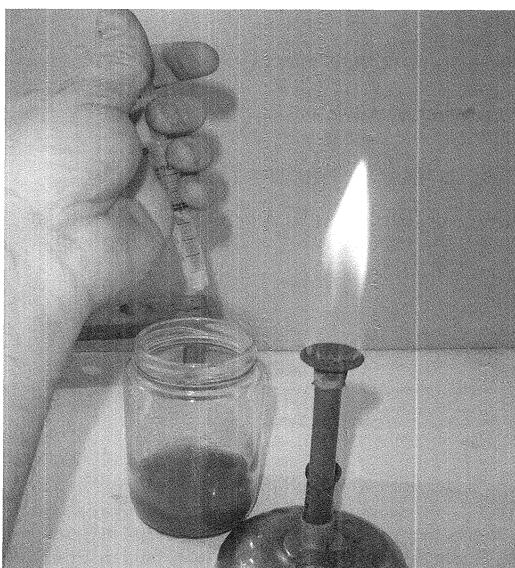


FIGURE 1. Sowing orchid seed with a syringe.

MATERIALS AND METHODS

An experiment with starch as the gelling agent was carried out. Media constituents were coconut water (100 ml.l^{-1}), 2g l^{-1} of commercial fertilizer with 6:9:6 N:P:K concentrations, 20g l^{-1} of sucrose, 100g l^{-1} of banana pulp, and four cherry tomatoes. Two kinds of starch were tested, maize and cassava, both inexpensive and easy to find. The starch concentrations were 70, 90, and 110g l^{-1} . Seeds were disinfected, in a syringe, with calcium hypochlorite at 0.5% concentration, washed twice with sterile water and sowed (FIGURE 1). The caps used to cover the flasks were either metal or polypropylene (FIGURE 2). After two months, seedlings were replanted (FIGURE 3) in the same media with the aid of a forceps disinfected with 1% calcium hypochlorite.

RESULTS

Media made with cassava starch did not reach the solid gel state. It was viscous even with 110g l^{-1} and did not allow sowing. Maize starch media remained firm, and seedlings planted in it grew well. Despite not being equilibrated in the composition (TABLE 1), the maize medium is suitable for sowing and growing orchids from seed, especially *Cattleya* and their relatives and *Oncidium*.

In storing the flasks, both types of caps, the

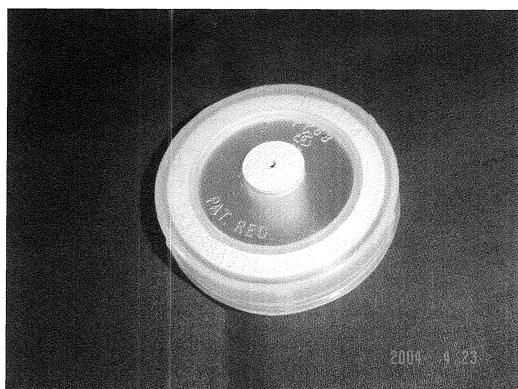


FIGURE 2. Polypropylene cap for media flask.

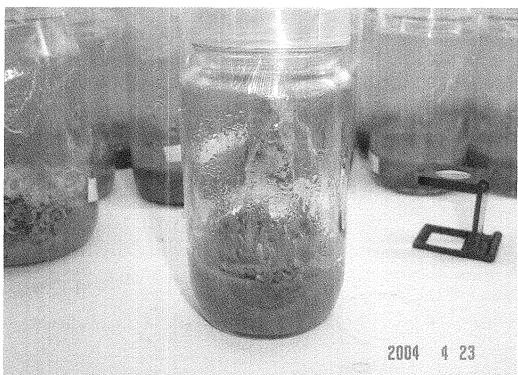


FIGURE 3. Orchid protocorms in starch medium, seedlings well developed and ready for replanting in same medium.

metal and the polypropylene, showed good results. After successive sterilization processes, however, the metal caps became oxidized and might release iron oxide to the media. For some orchid species, iron oxide can be toxic.

The results obtained were better when just a few seeds, ca. 40–50 per flask, were sown. Sowing with a syringe facilitated the process.

CONCLUSION

If the purpose of sowing orchid seed is non-commercial, a media using starch as the gelling agent can be used with good results. The pH may be adjusted, as needed, with ammonia hydroxide or hydrochloric acid. This type of methodology promises to be of special interest to private growers, who are interested in raising their own orchids.